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Reconnaissance Report

for

Humboldt National Forest
Ruby Mountains Ranger District

Hole-in-the-Mountain
Potential Research Natural Area

Report prepared for:

Intermountain Research Station
USDA, Forest Service
324 25th Street
Ogden, Utah 84401

Report prepared by:

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Reno, Nevada 89501

May 1991

Reconnaissance Report
Summary Page

Area Name: Hole-in-the-Mountain

National Forest: Humboldt *Ranger District*: Ruby Mountains

Quadrangles: Humboldt Peak and Tent Mountain, 7.5 minute series

General Location: About 26 km (16 mi) southwest of Wells in the East Humboldt Range, central Elko County, Nevada.

Size: 2,000 acres *Physiographic Region*: Great Basin

Major Cells Present:

Subalpine treelimit: *Pinus flexilis* and *Pinus albicaulis*;
Subalpine shrublands: *Artemisia tridentata* ssp. *vaseyana-Festuca idahoensis-Agropyron spicatum, Artemisia tridentata* ssp. *vaseyana-Festuca idahoensis-Bromus carinatus*;
Alpine steppe: *Poa fendleriana-Ivesia bailey* ssp. *setosa*;
Alpine meadow: *Potentilla diversifolia*;
Alpine shrubland: *Potentilla fruticosa*;
Alpine talus and scree: *Phlox pulvinata* and others.

Additional Features:

Glaciated features, such as cirques and moraines. Introduced mountain goat. Habitat for *Astragalus robbinsii* var. *occidentalis*, a federal category 2 candidate.

Recommendation:

The Hole-in-the-Mountain area would make an excellent contribution to the RNA system because it holds exemplary subalpine and alpine targets in good to excellent condition. I recommend that the INT/R4 RNA Committee formally nominate the Hole-in-the-Mountain candidate RNA to the Regional Forester, and plan for the completion of an Establishment Record. I further recommend that this reconnaissance report be made available to the Humboldt National Forest to help complete the required environmental assessment in a timely fashion.

Prepared by: Jan Nachlinger

Date: 5 June 1991

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Ruby Mountains District
Humboldt National Forest

Introduction

The *Regional Guide for the Intermountain Region* states that Research Natural Areas (RNAs) are to be established as part of the national system of RNAs to promote and protect biological diversity (U.S. Department of Agriculture, 1984). The national RNA system will eventually include representative and unique examples of forest, shrubland, grassland, alpine, aquatic, and geologic targets that have special characteristics of scientific interest and importance. A workshop held in 1982 and directed at identifying RNA needs in Nevada and Utah indicated that the Great Basin Province was lacking representation of alpine lands (Van Pelt, 1982). The area from Hole-in-the-Mountain Peak to Humboldt Peak in the East Humboldt Range was identified in the workshop's resulting document as one of several areas of known importance for its alpine ecosystems. It was also identified as important for its alpine glaciated landscape which includes geologic features such as moraines, cirques, and alpine lakes.

The purpose of this reconnaissance-level survey was to evaluate the quality of the Hole-in-the-Mountain area as a potential RNA to represent subalpine and alpine terrestrial communities. Presence of the target communities in sound condition was the essential consideration, but other basic qualifying criteria, such as minimum size (> 300 ac) and relative lack of human-caused disturbances, were evaluated. The quality of the plant communities around Hole-in-the-Mountain was considered in light of other alpine areas to determine whether this area was the best choice for representation of the target cells of interest. The most suitable boundary for an RNA was appraised on site primarily by taking ecological needs into consideration, but, management concerns were also kept in mind.

The Ruby Mountains Ranger District Office was visited on 16 July 1990 to meet with staff and discuss land status, uses, and current management of the Hole-in-the-Mountain area (Mitch Bulthuis, personal communication). The field reconnaissance survey of the Hole-in-the-Mountain area was conducted on 17 July by myself.

General Description

The East Humboldt Range is an impressive Great Basin range with glaciated alpine topography in northeastern Nevada (McLane, 1978). It lies within the Great Basin section of the Basin and Range physiographic province (Fenneman, 1931). The high point of the range is Hole-in-the-Mountain Peak at 3,446 m (11,306 ft) in elevation and towering about

1,400 m (4,600 ft) above neighboring Clover Valley to the east. The Hole-in-the-Mountain feature that provides the peak's name is just south of the peak and is the largest of several holes in the rock near the summit ridgeline area (Photo 3). The East Humboldt Range is capped by a splendid and jagged alpine ridgeline and subtended by impressive subalpine areas.

The East Humboldt Range is a representative Great Basin fault-blocked mountain range trending north northeast-south southwest with an clear westward tilt (Sharp, 1939 and 1940). The core of the range is composed of metamorphic and igneous rocks. These include gneiss, gneissose granite, migmatites, quartzose schist, and calcic-silicate rocks. Overlying the core are brittly-deformed sedimentary and volcanic rocks of Paleozoic and Tertiary age (Hurlow, 1987). This range, along with the Ruby Mountains to the south, was extensively glaciated during the late Pleistocene. Evidence of glaciation is seen in the cirques, domes, aretes, and hanging valleys that are common along the crest, as well as in the abundant moraines along the base of the range.

The vegetation of the Hole-in-the-Mountain area is comprised of subalpine treelimit and shrubland communities, and alpine shrubland, grassland, and forbland communities. The area is floristically classified within the Central Great Basin section of the Great Basin division of the Intermountain region (Cronquist *et al.*, 1972). This section is floristically unique in that the flora has recently evolved since major plant migrations occurred from the Rocky Mountains and Western Cordilleran source areas (Reveal, 1978).

Location and Access

The Hole-in-the-Mountain area is in Elko County about 26 km (16 mi) southwest of Wells in the central part of the East Humboldt Range (Maps 1 and 2). This subalpine-alpine area lies about 19 km (12 mi) south of Welcome located on Interstate Highway 80. The legal description of its location is Township 35 North, Range 61 East, West 1/2 sections 5, 8, 17, and 20, East 1/2 sections 6, 7, 18, and 19; and, Township 36 North, Range 61 East, East 1/2 Section 31, and West 1/2 Section 32, Mount Diablo Meridian. Hole-in-the-Mountain Peak is at latitude 40° 57' 5" North, longitude 115° 7' 15" West, while Humboldt Peak is latitude 40° 54' 5" North, longitude 115° 7' 10" West. Humboldt Peak lies 5.6 km (3.5 mi) south of Hole-in-the-Mountain Peak. Useful maps for the area include U.S. Forest Service Ruby Mountains Ranger District (1/2 in/mi scale) and U.S. Geological Survey 7.5 minute series Humboldt Peak and Tent Mountain.

Access to the higher elevations of the East Humboldt Range is somewhat difficult because of the checkerboard nature of land ownership in the area. The Forest Service has agreements with some private land owners to provide access to the National Forest lands and visitors can get access through locked gates once contacts have been made with these land owners. Access to the Hole-in-the-Mountain area is made from both the west and

east on roads and trails, and eventually cross-country travel, although the approach from the west is apparently easier. The steeper, but shorter, eastside approach through Lizzies Basin was not attempted during this survey. A two-wheel-drive vehicle is sufficient.

To approach the west side, drive southeast from Deeth located 52 km (32 mi) east of Elko on Interstate Highway 80 for about 7 km (4.5 mi) to the Starr Valley Road. Turn south and continue down this road about 6.5 km (4 mi) to the Boulder Creek crossing. A series of private pasture gates blocks access up the forks of Boulder Creek. Permission to pass and the gate keys must be obtained from Dick and Carol Wacthel or John and DeeAnn Carter in order to continue about 2 km (1.2 mi) further east along this road. Hike first along Forest Trail 028 and then Forest Trail 027 up the Fourth Boulder Creek drainage about 11 km (7 mi) to its upper reaches. Continue cross-country up the steep slopes to the ridgeline between Hole-in-the-Mountain Peak and Humboldt Peak.

Land Status

The Hole-in-the-Mountain area lies partially within lands administered by the Ruby Mountains Ranger District of the Humboldt National Forest. The area lies in part within the 36,900 ac East Humboldt Wilderness Area designated by Congress on 5 December 1989. There are no cabins, administrative sites, utility corridors, roads, trails, or communication sites on the Forest lands within the immediate area. Private lands occur in sections 7 and 19 (T 35 N) and Section 31 (T 36 N). The *Humboldt National Forest Land and Resource Management Plan* specifies that land exchanges, acquisitions, and right-of-ways will be pursued to provide public access and block up land for more efficient management in the area (U.S. Department of Agriculture, 1986).

Mining claims within the Hole-in-the-Mountain area were not researched for this report nor was the status of oil and gas leasing. The area has little potential for energy and mineral development and no operating plans currently exist. No conflicts with mineral and energy interests are foreseen.

There is one grazing allotment west of the crest in the Hole-in-the-Mountain area. The Tent Mountain cattle allotment, presently permitted from 20 June through 30 September, has a rest rotation schedule. It is heavily grazed at the lower elevations where slopes are gentle and forage production is good. However, little evidence of grazing was observed during the field visit on the steeper upper slopes in the area of interest. Forage production is relatively low in the subalpine and alpine areas. In light of the current management situation, no conflict from grazing interests are anticipated.

Recreational use in the Hole-in-the-Mountain area is low and primarily restricted to hiking, associated wilderness activities, and hunting. Trail use along the access route was fairly light, possibly because of the remoteness of the area and the access situation.

Essentially no evidence of human use was seen along the alpine ridgeline. The East Humboldt Range has a healthy introduced mountain goat population, which is hunted, but little evidence of hunting camps were seen in the area. Packers occasionally guide in hunting parties, but their livestock appear to remain at lower elevations and on gentler slopes. An introduction of bighorn sheep is planned for the range. Management of the area for its wilderness values is compatible with RNA status, and no conflicts with recreational activities or wildlife values are expected.

Primary Features

The Hole-in-the-Mountain area has several subalpine and alpine plant communities in good to excellent condition. The following descriptions are tentative because they are based on one short field visit and meager plant collecting for purposes of identifying the dominants.

The upper subalpine areas are delimited by scattered individuals of *Pinus flexilis* and possibly *P. albicaulis* at treelimit (Loope, 1969; Eyre, 1980). Understory around the trees is sparse and includes *Carex hoodii* (?), *Sedum rosea, Trisetum spicatum,* and *Penstemon procerus*. Individual pine trees take on a stunted growth form at treelimit. This community was in good condition.

The lowest open subalpine slopes are clothed with mountain big sagebrush shrubland vegetation. Community types include *Artemisia tridentata* ssp. *vaseyana-Festuca idahoensis-Bromus carinatus* and *A. tridentata* ssp. *vaseyana-Festuca idahoensis-Agropyron spicatum* communities (Mooney, 1985; Jensen *et al.*, 1988a and 1988b). Common species in these communities include *Symphoricarpos oreophilus, Mertensia oblongifolia,* and *Balsamorhiza sagittata*. (Photo 1). These communities are in very good condition.

Alpine plant communities include dry steppe, moist meadow (fell-field), shrubland, and talus and scree (alpine barren) types. These communities form a mozaic of alpine vegetation types along the ridgeline as a result of varying substrate and topographic situations which exert control over the amounts of moisture, rock, and exposure to wind (Billings, 1978 and 1988; Loope, 1969). General photographs of these alpine ecosystems are in Photos 1, 2, 4, and 5. All alpine communities were in near-pristine condition.

Above the mountain big sagebrush communities lies an open alpine shrubland dominated by *Haplopappus macronema* at lower limits and *Potentilla fruticosa* and *Ribes montigenum* at its uppermost limits. Several herbaceous perennials are present among the shrubs and bunchgrasses. Soil surface is rocky and the community has a very open aspect (Photo 4).

In protected to exposed microsites where soil moisture is relatively less, an alpine dry steppe community is present. The dominants are *Poa fendleriana* and *Ivesia baileyi* ssp. *setosa* (Billings, 1978 and 1988). Associated species include *Leucopoa kingii, Smelowskia calycina, Potentilla diversifolia, Erigeron compositus* and many other characteristically alpine species. The community is very open with a rocky soil surface (Photo 5).

In contrast, on protected to exposed microsites where the soil moisture is relatively greater, for example, near late-lying snowbanks, an alpine moist meadow community is present. Dense patches of *Potentilla diversifolia* occur here with various grasses and sedges. Associates such as *Dodecatheon pulchellum* and *Saxifraga* sp. are present (Photo 6).

The most exposed, dry, and rocky slopes are occupied by an alpine talus and scree community. In this barren community, rock may account for up to 99 percent of the cover, while total plant cover rarely exceeds five percent. Classic alpine species occur here: *Cymopterus humboldtensis, Poa rupicola, Castilleja nana, Draba densifolia,* and *Pholx pulvinata* (Photos 2 and 4).

One federally listed or candidate species for threatened or endangered status is known to occur within the Hole-in-the-Mountain area (Nevada Natural Heritage Program, personal communication). It is the category 2 plant candidate, *Astragalus robbinsii* var. *occidentalis*, which occurs at moderately high elevations in area. Suitable habitat for the rare plant was encountered during the survey, although the species was not seen.

Size and Boundary

A recommended ecological boundary for the proposed Hole-in-the-Mountain Research Natural Area is given in Map 2. I have assumed that the high elevation private lands will eventually be acquired by the Humboldt National Forest as this boundary encompasses the private lands in two sections. The boundary follows contour lines which define the upper subalpine and alpine communities in the Hole-in-the-Mountain area. The western boundary follows the 3,048 m (10,000 ft) contour while the steeper-sided eastern boundary follows the 2,987 m (9,800 ft) contour. It is composed of the alpine crest and adjacent slopes with moderate to extremely steep grades. These slopes form the headwaters regions for numerous watersheds flowing west and east. Any subsequent legal boundary used to more conveniently describe and manage the area should encompass the entire recommended ecological boundary.

The size of the recommended area is roughly 810 ha (2,000 ac) with about 200 ha (500 ac) of private lands. This is a relatively large area for an RNA–however, it is not expecially diverse in community types for the size because of the predominantly alpine nature of the area.

Suitability for Research Natural Area Candidacy

The Hole-in-the-Mountain area would make an outstanding RNA for subalpine and alpine target communities. The ridgeline between the Hole-in-the-Mountain Peak and Humboldt Peak harbors several alpine plant communities in excellent condition which are in need of receiving representation in the RNA network. The unique setting with extensive glaciated features has resulted in plant communities that are floristically different from other Great Basin alpine communities already represented in the network.

The area exceeds the minimum size requirement and is in good to excellent overall condition with essentially no evidence of human-caused disturbances at the higher elevations. The alpine area is remote, and although arduous to access, it would be ideal for alpine research activities in need of isolated and near-pristine conditions.

There appear to be no conflicts with other uses in the area. Recreational use is very light. Mineral potential and forage production are low. Commercial timber is non-existent. RNA designation would be compatible with wildlife and wilderness management. Finally, district-level staff were essentially supportive of the special designation and voiced no substantive management concerns.

Recommendations

I recommend that the Intermountain Station/Region 4 RNA Committee formally nominate the Hole-in-the-Mountain candidate Research Natural Area to the Regional Forester because the area is well-qualified for the RNA designation.

In addition, the INT/R4 RNA Committee should plan for the timely completion of an establishment record for the candidate RNA. Field work done for the establishment record should be an in-depth survey to more fully describe and classify the plant communities present. The area around Humboldt Peak was not explored during the reconnaissance visit, so it should be more closely evaluated for its unique features. The field work should also verify occurrences of any federally listed or candidate species for threatened or endangered status within the Hole-in-the-Mountain area.

Finally, I recommend that this reconnaissance report be made available to the Ruby Mountains Ranger District so that they may use its contents to complete an environmental assessment of the RNA designation action. This is a necessary step to comply with the National Environmental Policy Act and timely action now will prevent delays in the establishment process later.

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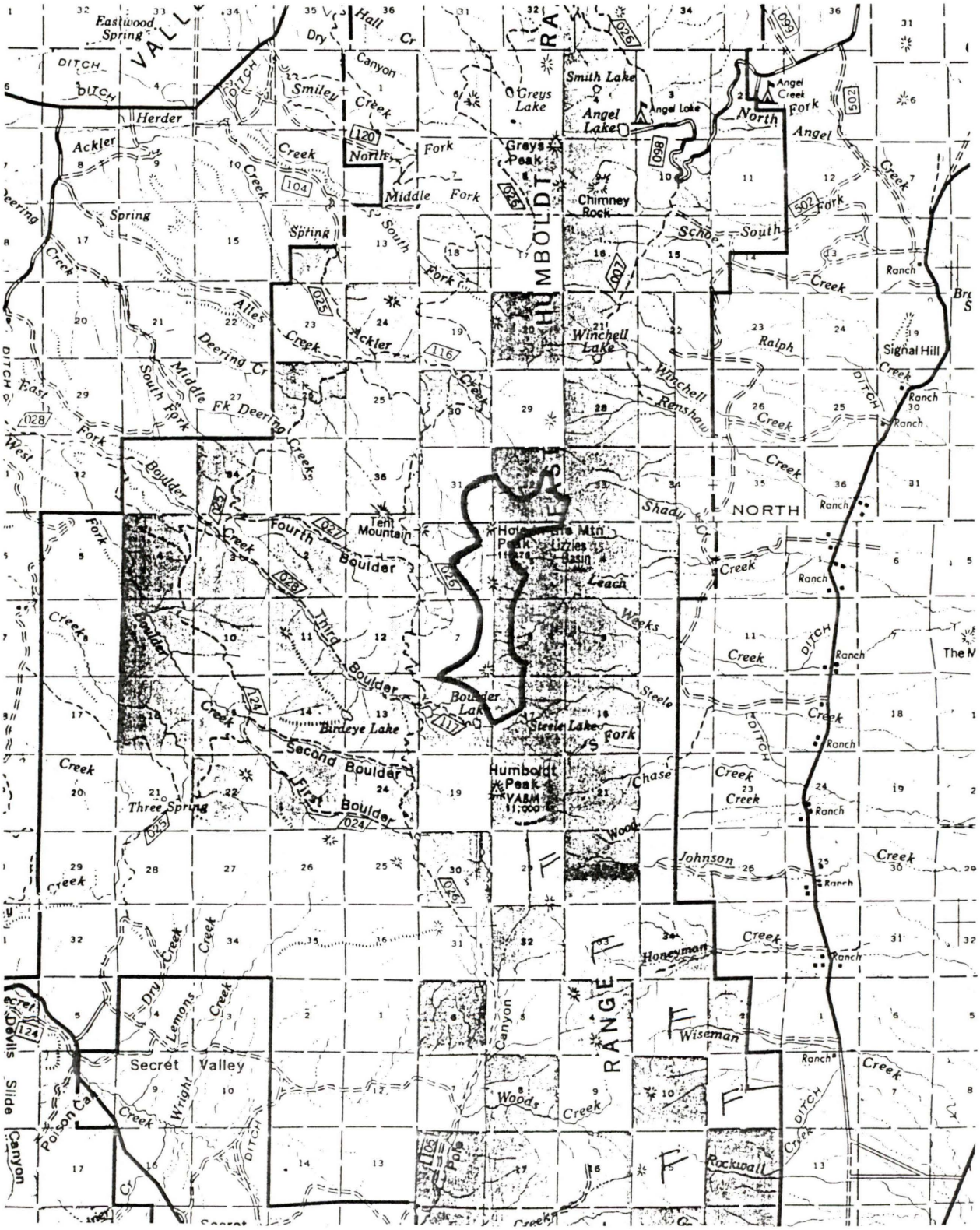
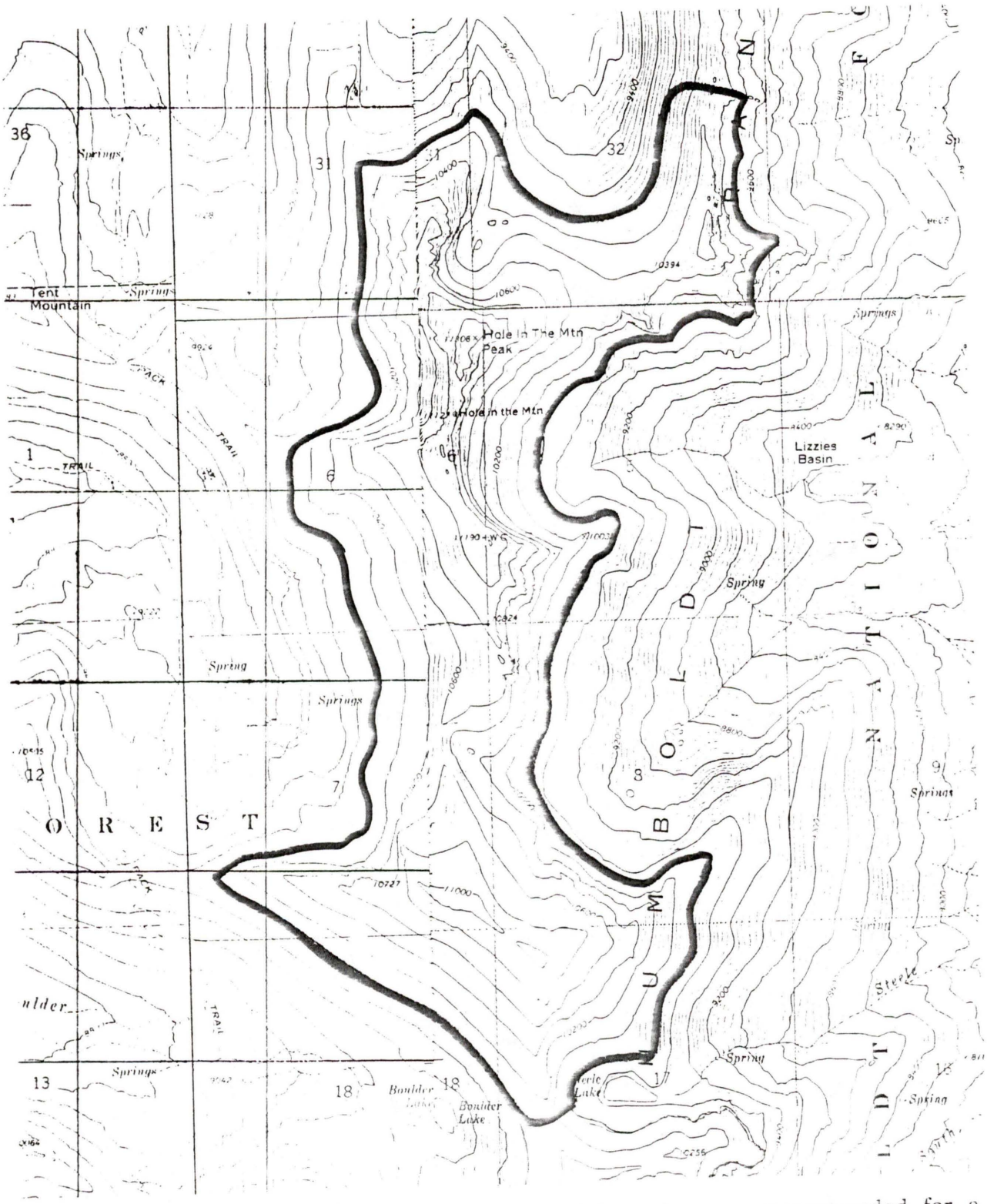


Map 1. General location of the Hole-in-the-Mountain area (USDA Ruby Mountains Ranger District at 1/2 inch/mile).



Map 2. Proposed boundary of the Hole-in-the-Mountain area recommended for a subalpine and alpine Research Natural Area (USGS 1:24,000 Humboldt Peak and Tent Mountain reduced 77 percent).

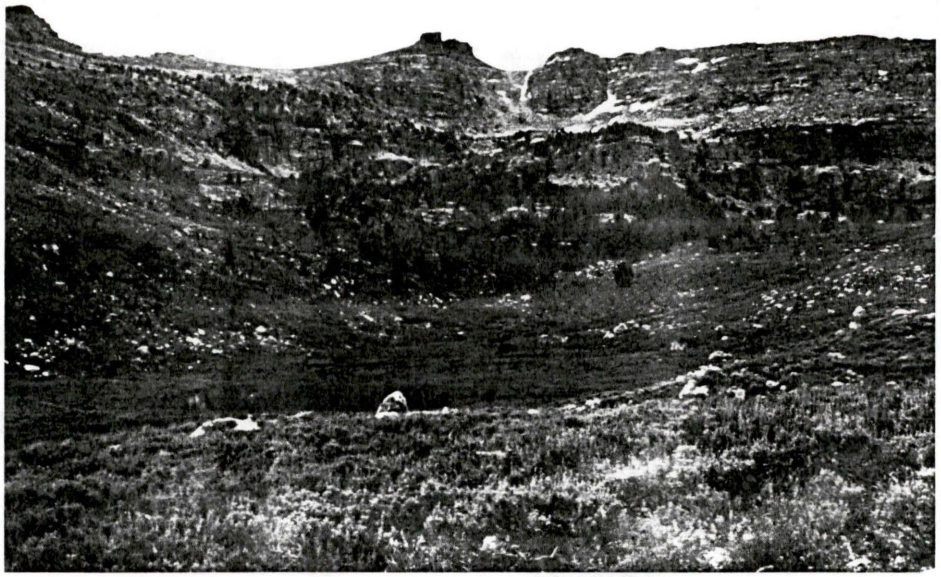


Photo 1. Distant view to E from Fourth Boulder of the subalpine and alpine lands south of Hole-in-the-Mountain. The ridgeline lies between Hole-in-the-Mountain Peak and Humboldt Peak. Subalpine mountain sagebrush and pine forest communities occur on the middle slopes at the lower recommended boundary of the RNA.

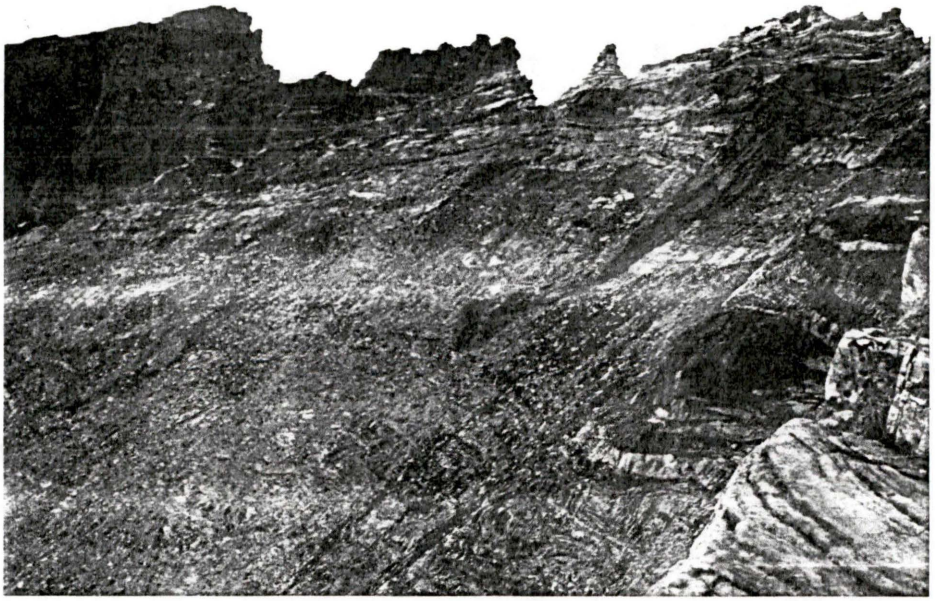


Photo 2. Steep alpine lands in the NW cirque of Hole-in-the-Mountain Peak. The Hole-in-the-Mountain is hidden from view, but is located just below and left of the sharply pointed peaklet right of center.

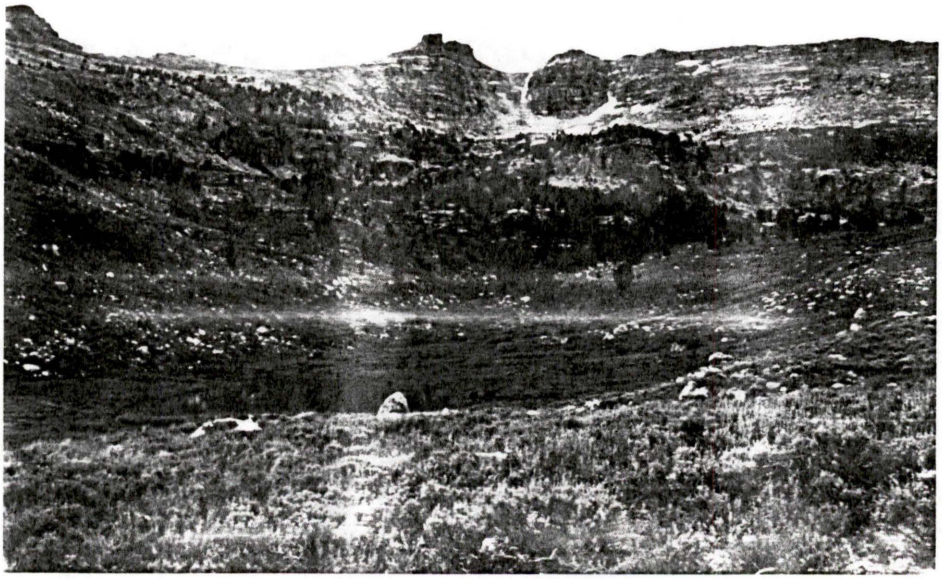


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Photo 2. Steep alpine lands in the NW cirque of Hole-in-the-Mountain Peak. The Hole-in-the-Mountain is hidden from view, but is located just below and left of the sharply pointed peaklet right of center.

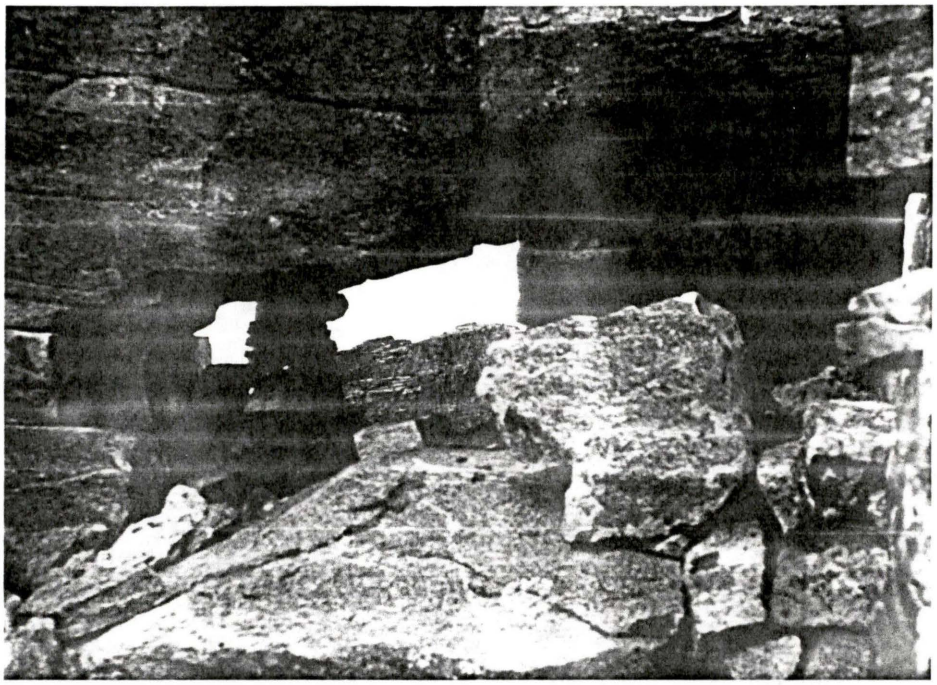

Photo 3. Several holes occur in the alpine crest at Hole-in-the-Mountain. This view to the N through a small hole frames the summit area of Hole-in-the-Mountain Peak.

Photo 4. View S from Peak 11,190 shows much of the alpine lands in private ownership in the eastern half of Section 7. Foreground is the alpine shrubland dominated by *Ribes montigenum*.

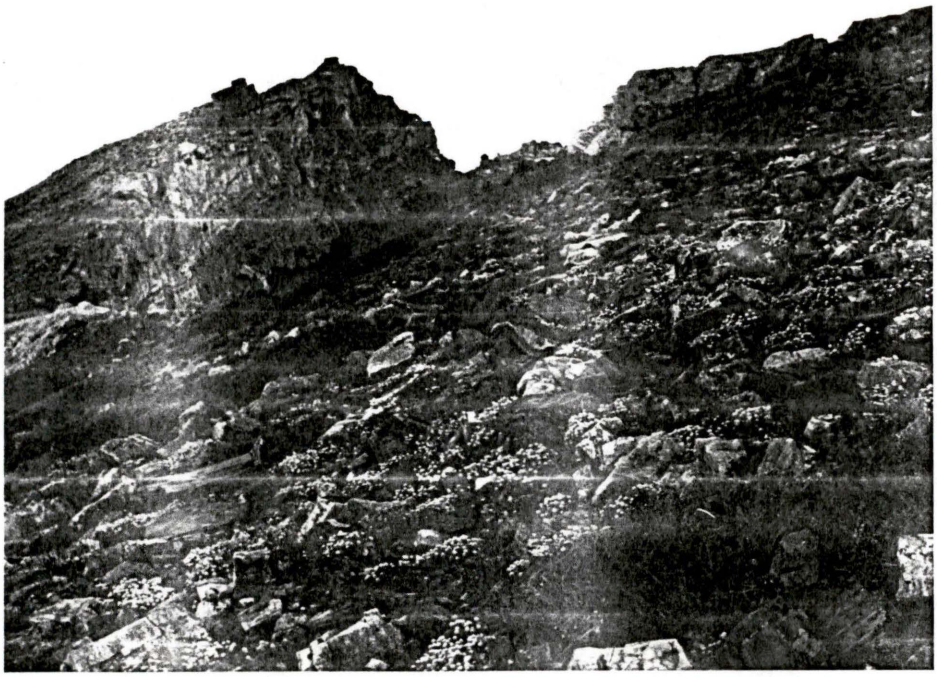

Photo 5. Southwest-facing slope in area S of Hole-in-the-Mountain. This alpine dry steppe community has *Leucopoa kingii, Eriogonum ovalifolium,* and *Ribes cereum* featured here.

Photo 6. Close-up view of the alpine moist meadow community at about 3,350 m (11,000 ft). Dominants include *Potentilla diversifolia, Antennaria rosea*, and *Dodecatheon pulchellum.*